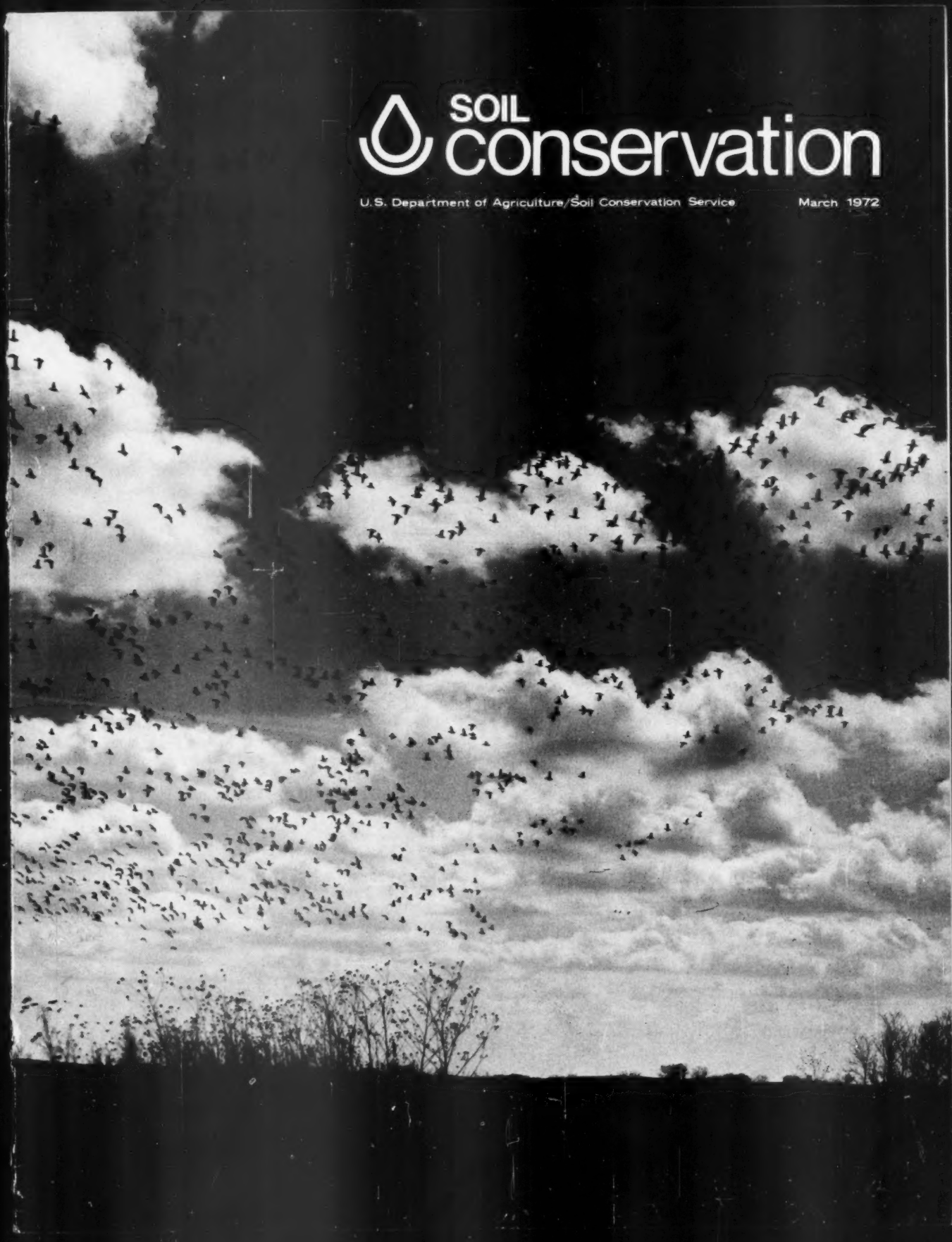

SOIL conservation

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SOIL CONSERVATION

March 1972, Vol. 37, No. 8

This issue of SOIL CONSERVATION focuses on the close working relations between SCS and state fish and game agencies and other authorities in seeking to improve the quantity and quality of the nation's wildlife resources. The articles point to positive actions, from Delaware to California, on the part of thousands of fish and game agency employees, conservation district leaders, and SCS people. Their efforts are helping to preserve or increase wildlife and bring about opportunities for people to enjoy it.

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A host of wildlife

COVER: Migrating geese beginning their descent to a 25-acre conservation pool in the Wilson Creek watershed, Otoe County, Nebraska. Photograph is by Erwin Cole.

Prepared in the Division of Information, Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C. 20250.

EARL L. BUTZ, Secretary of Agriculture
KENNETH E. GRANT, Administrator, Soil Conservation Service
PHILLIP A. CHAVEZ, Editor
GEORGIE A. KELLER, Production Editor

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Channels and wildlife

by James D. McCall
Biologist, SCS
Indianapolis, Indiana

and Russell Hyer
Coordinator of Watersheds and River Basins, Indiana Department of Natural Resources
Indianapolis, Indiana

How does a state achieve improved water control and at the same time sustain habitat for fish and wildlife? In Indiana interagency cooperation has brought the answer.

Both the Indiana Department of Natural Resources (IDNR) and the Soil Conservation Service recognize that wildlife is an important indicator of a healthy environment. Lands for wildlife are a necessity if we are to have a desirable ecological balance. Both organizations have over the years devoted much of their time and talents toward this objective.

During the 1950's and early 1960's, the IDNR's Division of Fish and Game was involved with the growing pains of reorganization and the changing methods of fish and farm-game production and had little time to spend on watershed planning. In 1965, the division began taking a more active interest in small-watershed and river-basin planning.

Richard "Gene" Bass, now director of the Division of Fish and Wildlife, personally made field studies of streams being considered for channel improvement with the SCS biologist, planning engineers, and soil conservationists. This kind of working relationship plus interest from local residents resulted in comprehensive plans for "natural stream corridors." These corridors provide public access for canoeing, fishing, hiking, photography, and nature study. The overall plan includes land treatment to reduce erosion and preserve a quality environment with multipurpose lakes for flood prevention, fishing, and other recreational uses.

More recently, the Division of Fish and Wildlife and SCS began working together to implement the new joint-agency policy geared to greater environmental emphasis, especially in those watershed projects involving channel improvement.

Currently, 17 watershed projects in Indiana are being re-evaluated to seek alternatives to old concepts of channel improvement. The following concepts have evolved from agreements between the two agencies and the conservancy districts representing the local landowners.

Channel work where it might damage fish and wildlife habitat will be kept to the absolute minimum. In the rolling areas of the state where impoundment sites are plentiful, both large and small floodwater-retarding structures will be installed where applicable to increase the watershed area from which runoff is controlled and reduce or eliminate the need for channel work. Most of the impounded reservoirs are of the size and depth necessary to meet Indiana standards for stocking with game fish and, in general, improving overall environmental conditions for man and wildlife.

Planning is complicated on flatland where the upper ends of the tributaries disappear in cropfields and homesites with no place for the storm water to go. On this kind of land, roads need ditches and urban developments need storm sewers.

It is here in the flatland that a tremendous effort is being made to develop and adapt new ways of solving an old problem. For example, bank-high trash drifts and debris blocks often cause stormflows to jump over the banks washing tons of topsoil

(Left) The Boggs Creek watershed channel was cleared on one side only. Vegetation on the opposite side was left unchanged for wildlife use. (Above) Big Raccoon Creek watershed supplies water for a continuous flow in some of the lower reaches of the main stream. The "natural stream corridor" concept is planned as the best use of the water resource.

from the valley floor and returning laden with silt to be deposited farther downstream. Formerly, the banks were cleared so that a large crane with a "clam shell" could be brought in to remove the debris block. Now, top-of-bank trees are saved, and small equipment such as handtools and tractors with cable winches are used to remove the debris. Equipment and labor needs may be further reduced by using explosives.

Where channel excavation is needed, work will be done from one bank only wherever possible. Existing tree cover on the other bank will serve as a filter strip, erosion-control stabilizer, wildlife habitat, and for other environmental purposes. Isolated specimen trees are to be marked and saved even though they may be on the working right-of-way.

Unavoidable damage to woody habitat will be repaired with new plantings. For each acre of mature trees removed, 1½ acres are to be planted. Young trees and shrubby type growth will be planted 1 acre for each acre removed. Areas that are adjacent to pasture are to be fenced to protect plantings from livestock.

Pools will be dug to serve as sediment traps during the period of construction. They will be cleaned out later and equipped with deflectors for fishing sites. Channel work construction through rock sections will include a series of pools and riffles to carry low flow. Pools will be 2½ to 4 feet deep with riffles about ½ foot deep. Shade trees will be saved or replanted to avoid thermal pollution. The bottom of the channel will be shaped or tilted to collect low-water flows, and oxbows can be retained and managed for fish and wildlife.

All wildlife habitat preservation and replanting areas are to be designated by permanent boundary markers and protected by permanent easements or fee titles.

An environmental impact statement for all watershed plans is to be prepared when tentative agreement is reached between IDNR and SCS and the local sponsoring organization. Both the plan and the environmental statement are sent to IDNR and other interested state and federal agencies for review and comment before final approval and funding.

Changes in land ownership and land use, economic fluctuations, improved standards of living, and overall population demands on available resources continue to present the two agencies with many problems. But the IDNR and SCS have agreed on guidelines to insure the most effective use of their services to the people of Indiana in planning and carrying out the fisheries and wildlife phases of their soil and water conservation programs. ♦

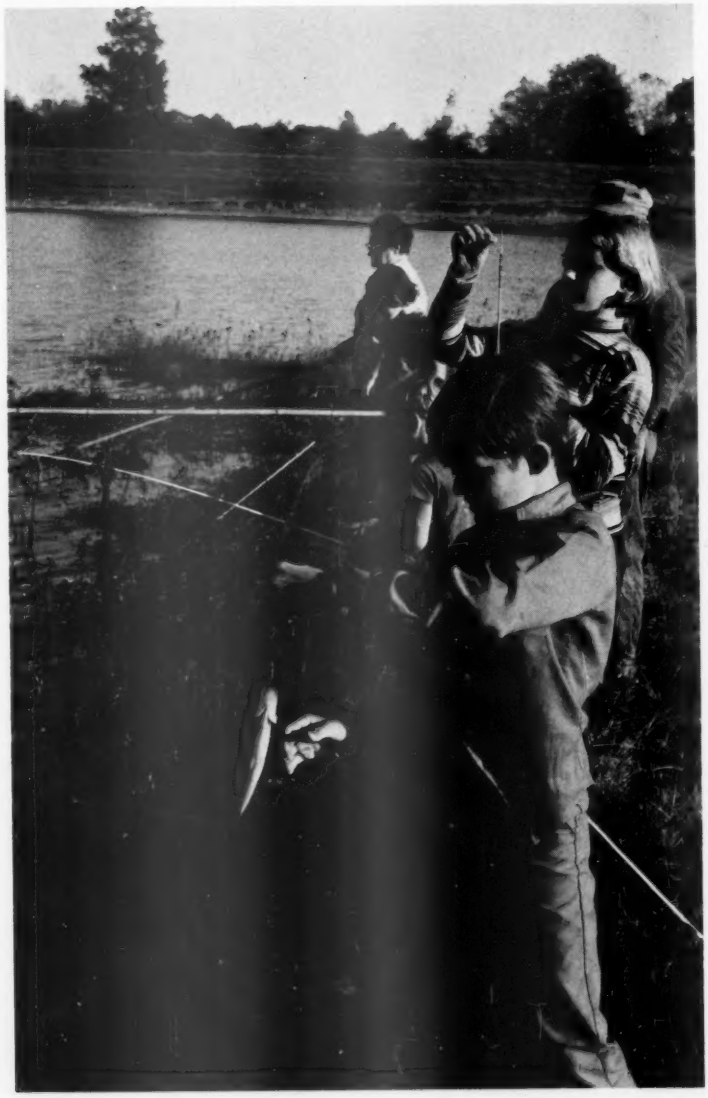
Landowners
keep gates open for sportsmen

by **Gene Warren**
Public information specialist, SCS
Alexandria, Louisiana

Jimmy LaBuff ran his fingers over the sleek surface of the two big mounted bass and said, "I can tell you a lot of good fish stories that came out of those two small watershed lakes over near Reeves. I caught this 7-pounder one night at about 10 o'clock and this 5-pounder earlier in the evening."

LaBuff, who lives in Kinder, Louisiana, speaks with authority when it comes to fishing and hunting. He is past-president of the Allen Parish Rod and Gun Club. He knows a good thing when he sees it, and he says the two lakes provide lots of fishing for people in the community.

The Bear Creek Watershed Project, completed in 1960, was one of the first in Louisiana to be built under the Public Law 566 Watershed Protection and Flood Prevention Act. Two of the three dams in the project hold water; one impounds about 55 acres of water and the other 8 to 10 acres. The lakes were stocked with bass and bream by the U.S.



Fish for dinner? The Frederick LaPoint family can enjoy fishing in this Bear Creek watershed lake even though all the land surrounding the lake is privately owned.
(Opposite page) The LaPoint children take time out for a picnic.

Department of the Interior shortly after they filled with water. "Fishing was good after the third year, and it hasn't changed since," says LaBuff.

James Guillory, SCS district conservationist based at nearby Oberlin, points out that the major purpose of the watershed project was to stop the periodic flooding of several thousand acres of good cropland and adjoining roads in Allen Parish. This problem triggered sponsorship of the project by the Allen Parish Police Jury and the Calcasieu Soil and Water Conservation District. "The bonus," says Guillory, "is the fishing, hunting, and recreation that the flood-prevention lakes provide."

LaBuff says the largest lake—55 acres—is one of the best fishing spots in central Louisiana. "I figure that more than 300 pounds of fish per acre are caught in the lake each year," he explained. "That comes to more than 16,000 pounds, and that's a lot of fish. Any day of the week there are 5 to 10 people, sometimes more, fishing in that lake. I'd say close to 1,500 people fish there each year."

LaBuff likes to wade-fish, but many others fish from boats. "My boy and I caught 97 big bluegill bream one evening wading the edges. The secret to good bream fishing is finding their beds. We found 12 beds that evening. Catches like that are common though. There have been several 6- and 7-pound bass caught in the lake."

The two lakes are bordered by woods and ricefields. Water draining into the lakes from the ricefields is highly fertilized. "This makes the lakes more productive because the fertilizer helps grow food for fish," says Guillory.

The lakes attract ducks, too—some mallards, but mostly wood ducks. People have built blinds in the lakes and say hunting is good.

Camping, swimming, and boating in spring and summer are popular at both lakes. All land around one lake is owned by the Ragley Lumber Company of Lake Charles, but the company allows anyone to use the area.

Frederick LaPoint, one of several farmers whose land is protected from floods by the structures, says his boys learned to swim in the lakes. He has 10 children. "Those lakes are the main point of interest for us. We hunt, fish, and swim up there."

LaPoint remembers that before the structures were built most of his 2,000-acre farm flooded after a 3-inch rain. "Not long ago we had a 10-inch rain, and I didn't have as much flooding as before with a little rain. Also, before the project, kids had to walk through high water to catch a school bus, and sometimes they couldn't get to school at all. But that problem is solved now."

LaBuff's Allen Parish Rod and Gun Club was organized in mid-1970; it has 180 members. These include farmers and businessmen —men who like to hunt and fish and who are concerned about conservation and wildlife management. "We hunt and fish on lots of private land around here," LaBuff says. "Landowners are happy to let our members hunt because they know we are going to protect their property. We try to build good relations between the sportsmen and the landowners. We report law violators and do all we can to fight pollution on land and water."

LaBuff claims that as long as people don't abuse the land around the lakes the owners will leave the land open to the public. "Our club tries in every way to see that this is done. These lakes mean a lot to people in our parish."

Backing up LaBuff, Louis Vallee, a druggist in Kinder, La., and member of the rod and gun club, comments: "The fact that those structures stop water from flooding people's land, their houses, and the roads is a great thing; when you can make that same water provide recreation for the people, that's the icing on the cake." ♦

Getting the game back

by Rose C. Fleming
Public information specialist, SCS
Jackson, Mississippi

In the fall, Mississippians hunt when it's still hot. It's 80 degrees in the shade of the purple-leafed persimmon trees rifled by coon and 'possum.

In winter, deer is the big game. Hunters gather at dawn, blowing on cold hands, soothing rangy Walker hounds.

And in the spring, turkey season opens, and oldtimers haunt the woods, observing the habits of unpredictable gobblers, the better to bag them some quiet dawn.

Mississippians—from the gulf to the prairie, from the clay hills to the delta—are loath to relinquish these pleasures that have gone with the land as they have known it for many generations.

But Mississippi is industrializing—even the rural areas. There are powerlines across swamps, and highways in sight of country roads. In many areas, the woods that drew the game are gone. More land is in cultivation, and more farmers are unwilling to permit the free and easy hunting of a generation ago—partially because their lands can no longer accommodate the vast number of "city" hunters and partially because the game itself has become increasingly scarce.

For these reasons Mississippians are developing a number of group wildlife plans to protect and increase game, insure better hunting, cement sportsmen-landowner relations, and in some instances provide added farm income.

Throughout the state, about 109 groups have completed such plans for about 481,000 acres. The Soil Conservation Service, through local soil and water conservation districts, is providing technical assistance. In fiscal year 1971, 27 groups received planning help for 146,000 acres.

The largest area covered by a single wildlife plan takes in 45,000 acres in Yazoo County—

(Opposite page) Until the deer population increases on its 45,000-acre preserve, the Piney-Techeva Conservation League is keeping hunters out.
(Left) D. Travis Fouche, president of the league, checks one of more than 1,000 signs that have been posted around the area.
(Below) Along this road in the Piney-Techeva watershed, bluffs of loess soil rise 40 to 50 feet straight up, mossed over, and thick with trees dripping trumpet vine, wild grape, and muscadine—all fine food for wildlife.

an area along Piney Creek and Techeva Creek. About 2 years ago, 240 cooperators with the Yazoo County Conservation District banded together to form the Piney-Techeva Conservation League. This legally chartered organization is governed by a 15-member executive committee.

"Our idea was to have a preserve, posted and patrolled," said league president D. Travis Fouche, who lives in Benton. "We realized that soon we would have nowhere to hunt if we didn't do something. We've all signed a 10-year agreement to develop this area and control the hunting. Nobody can hunt deer or turkey here now. After the game is established, we may allow commercial hunting. If we do, we will probably divide the area into hunting camps of 4,000 or 5,000 acres each and lease them to hunting clubs that can build their own lodges."

More than 375 ponds have been built in the area, all with technical help from SCS. And SCS will help with habitat improvement programs once the wildlife becomes established. J. D. "Shorty" Goodwin, SCS district conservationist at Yazoo City, says that no special wildlife plantings are needed in the area at present. "According to our biologists, Edward Sullivan and Pete Heard," says Goodwin, "nature can provide native plants for habitat and food in this area for some time."

League vice-president E. A. Edgar, Jr., from Yazoo City, attributes game dearth in the Piney-Techeva area to illegal hunting. "Yazoo County was once a mecca for sportsmen," he says. "I have hunted here all my life. I want my son to have the same opportunity. At present we're protecting this land from illegal hunting. We have some turkey that the Mississippi Game and Fish Commission has given us, and we plan to stock some areas with deer."

All the league members have high hopes that in years to come deer will be abundant—along with rabbits, coons, 'possums, turkeys, quail, and squirrel—in their green forest. ♦

Fish and kids love a clean stream

by Douglas E. Paynter
District conservationist, SCS
Jackson, Wyoming

"Stream pollution in Jackson Hole?" asked a startled tourist. "I can't believe my eyes!"

The pollution the disbelieving tourist spoke of was a cowtown's discarded trash, accumulated over a period of several decades, along a mile-long stretch of Flat Creek running through the little town of Jackson, Wyoming.

In recent years, this same stretch of stream has been officially designated as a Children's Fishing Area by the Wyoming Game and Fish Commission. Only youngsters under the age of 14 are permitted to fish there. The commission keeps this part of Flat Creek well stocked with cutthroat trout.

In the summer of 1969, the editor of the *Jackson Hole Guide* conceived the idea of a "Kids' Fly Fishing Contest." Local merchants responded by providing more than $500 worth of prizes.

The contest was a rousing success. But many people, including contest judges and parents of the contestants, were shocked by the condition of the stream. During the contest, they saw children fishing among old rubber tires, oil drums, barbed wire, broken glass, tin cans—even the decaying rib cage of an elk. At the upper end of the fishing area, an oil leak sent a thin film of oil skittering over the water's surface. On the far side, a dozen houses had been built beyond the town's sewage disposal system. In several places, landowners had dumped fill along the edge of the stream.

Concern over the stream mounted. There was talk that a new bypass highway would obliterate the Children's Fishing Area.

(Opposite page) Bruce Moyer, 12, used a yellow-wooly-worm artificial fly to catch the cutthroat trout that won him the grand prize at Jackson's first annual Kids' Fly Fishing Contest.

(Above, left) Gussie Martin, knee-deep in water, helps load a boat with trash from the Children's Fishing Area along Flat Creek.

(Above, right) These volunteer workers are putting quarry rock in place to form a wing deflector across the creek. (Photographs courtesy of *Jackson Hole Guide*.)

Many people expressed a desire to help. The Jackson Town Council felt powerless because all the land was privately owned. Yet the 20 landowners seemed anxious and willing to cooperate. What could be done?

The Teton County Conservation District supervisors provided the necessary catalyst. They declared that, with SCS assistance, they would be happy to provide leadership for a restoration program.

The offer touched off a massive cleanup campaign that found 2 dozen volunteers, wearing hip boots and waders, splashing through the chilly September waters collecting trash. On two separate weekends, several truckloads were removed. Boats and rafts were used to transport the debris to pickup points.

Volunteers came from organizations such as the U.S. Forest Service, Chamber of Commerce, Wyoming Game and Fish Commission, Trout Unlimited, Jackson Town Council, Jackson Hole ENACT, Jaycees, and Jackson Hole Fly Fishermen's Club. Other help poured in from the rest of the community: a car dealer donated a tow truck to pull an old car body out of the stream; a repair shop donated special hand hooks for snagging trash from the stream bottom; a float-trip service provided two rubber rafts and a pram; a merchant served hot coffee and donuts; and a rancher loaned his dump truck to haul the trash away.

The results were overwhelming. The town council announced plans to extend sanitary sewers to the houses on the far side of the creek. The oil leak was located—the landowner agreed to stop the leak and, furthermore, offered to donate a parcel of land to Jackson for picnic use at the Children's Fishing Area. The local newspaper ran several picture stories on the cleanup. The Wyoming Highway Commission assured the group that the proposed bypass highway would be designed to complement the Children's Fishing Area rather than destroy it.

Last winter, Wyoming Game and Fish Commission officials and SCS developed a plan for further improvement of the trout habitat. Locations for rock jetties, deflectors, random boulders, and riprap were mutually agreed upon by the two agencies. A sketch showing the proposed work was presented to the landowners along the stream for their approval. Following this, a working agreement between these landowners and the conservation district was signed. The Game and Fish Commission allocated $1,000 toward the project, and the Jackson Hole Fly Fishermen's Club offered an additional $300.

In the spring of 1971, volunteers again put on their boots and placed, by hand, nearly 100,000 pounds of quarry rock for the habitat improvement structures. Where vehicle access was not a problem, the rock was loose-dumped to form jetties for velocity control.

The second and third annual Kids' Fly Fishing Contests have been progessively better than the first. And Jackson residents no longer hear cries of "stream pollution" from startled tourists. ♦

Cooperation brings more wildlife

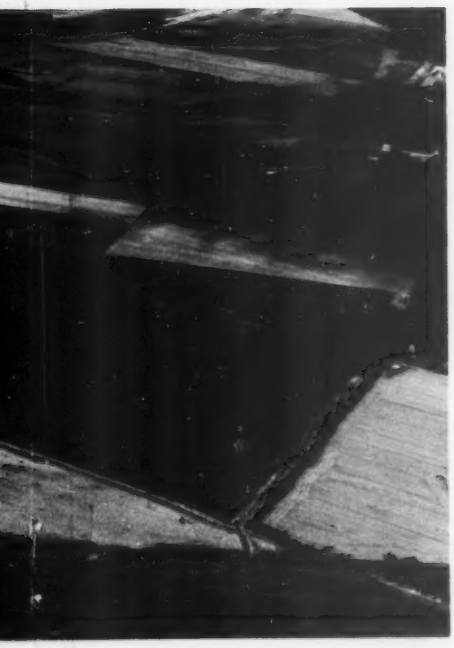
In Illinois, where more than 90 percent of the land is privately owned, wildlife abundance results where habitat management complements agronomic and soil conservation practices in a practical land-use pattern. This is not always easy to do, but wildlife biologists in the Illinois Department of Conservation and SCS biologists and conservationists, working cooperatively, are combining their knowledge and experience to get the job done.

The two agencies cooperate in demonstrating pond management and in encouraging development of wildlife habitat around ponds. About 1,200 ponds are built each year in Illinois. SCS people plan and design the ponds for landowners and encourage fish stocking and management in accordance with techniques developed and recommended by the Illinois Division of Fisheries. Many of the ponds are stocked with bass and bluegill provided free by the division.

Because of the continuing need for new and better plants for wildlife habitat, erosion control, and other conservation uses, SCS operates 20 plant materials centers where specialists assemble and evaluate plants from all over the world. The center at Elsberry, Mo., examines new plants for adaptability to climates and soils in Illinois, Iowa, and Missouri. The Illinois Department of Conservation helps SCS test promising new plants at its field sites. The department produces proved plants in quantity at state-owned nurseries operated by the Division of Forestry and distributes them to landowners for conservation purposes at nominal cost. One such plant that has

to Illinois

by Rex Hamilton
Wildlife biologist, SCS
Champaign, Illinois



(Above) Howard Reves inspects the sericea lespedeza planted for wildlife food and cover around his 2-acre fish pond.
(Extreme left) This field of milo can provide plenty of waste grain for quail and doves. The multiflora rose hedge serves as a protective travel lane for small game and produces berries for birds.
(Left) This diked 140-acre wooded area is a greentree reservoir, attracting ducks and other waterfowl. It is flooded each fall before the hunting season.

gained wide acceptance is autumn olive.

The Illinois Department of Conservation also asks SCS to assist in developing resource conservation plans for properties owned or managed by the state. Typical of this assistance is a plan recently developed for about 16,000 acres bordering the upper end of Rend Lake in southern Illinois. The department is developing and managing the land as a wildlife refuge and public hunting area. SCS is helping with erosion-control practices, crop rotations, and engineering of water-control structures, dikes, and levees.

"Most of this land is tenant-farmed on a crop-share basis," says Bill Mestel, district game biologist at Mt. Vernon, Ill. "The farmer harvests his share of the crop. Our share is left on the field as food for wildlife."

Assistance to private landowners is also a cooperative effort between the Department of Conservation and SCS. SCS, with professional people in every county, has a good opportunity to stimulate interest in wildlife habitat on private lands. With about 95 percent of Illinois land in private ownership, this opportunity is extremely important. When the SCS district conservationist finds a landowner who is interested in a comprehensive wildlife development plan, he refers the landowner to the department's nearest district game biologist, who is responsible for the management of wildlife resources and habitat development in his district—generally eight or more counties.

The Pilgrim Wildlife Area in Perry County, Ill., is a project that evolved out of this referral system. Here, 35 landowners and tenants have developed about 13,000 acres for wildlife. To improve their farmland for wildlife, they planted 15 miles of multiflora rose hedgerows. These serve as travel lanes to and from

the croplands and provide protection from weather and predators. About 600 acres are planted to native grasses, legumes, and other wildlife foods such as buckwheat, lespedezas, and millet. More than 250 acres of woodland are protected from fire and livestock grazing. Nearly all of the farmers are cooperators with the Perry County Soil and Water Conservation District and have developed resource conservation plans for their farms.

Warren Burris, president of the landowners group, says, "Ponds in the Pilgrim area provide about 50 acres of fishing waters. We catch bass, bluegill, and channel catfish. Our record catch is a 10-pound catfish."

Of course, you don't have to join a group to develop your land for wildlife. Howard Reves owns 199 acres in Washington County, Ill., and manages 70 of those acres for wildlife habitat. He uses 112 acres for corn, soybeans, and wheat. Waste grain in these fields provides wildlife food adjacent to good cover. Reves also has 3 miles of multiflora rose hedges, 8 acres of trees, and 2 ponds, both managed for fish. He has trial plantings of autumn olive, hawthorn, crabapple, Ussurian pear, witchhazel, hybrid chestnut, shrub lespedeza, and scotch pine that he is field testing for the SCS plant materials center.

SCS helped Reves prepare a conservation plan, designed one of his ponds, and furnished the plant materials for trial. The Department of Conservation planned the wildlife plantings, helped with fishpond management, and donated multiflora rose and other plants.

Some wildlife developments bring extra income. LeRoy Rendleman, Union County, Ill., turned 140 acres of woodland into a shallow water greentree reservoir for ducks. He floods the land about the first of October to attract ducks for the fall hunting season. He drains the area each spring so the trees will not die. The Department of Conservation provided technical information on how to design and manage the shallow water development. SCS designed levees and a drainage system.

The U.S. Department of Agriculture's Watershed Protection and Flood Prevention Program offers still another opportunity for the Illinois Department of Conservation and SCS to cooperate with landowners in improving land for fish and wildlife.

In the Scattering Forks watershed near Tuscola, Ill., landowners planted 8,200 pine trees and 27,500 shrubs, including bush honeysuckle and autumn olive, along 5 miles of streambank. SCS district conservationist Joe Fasig coordinated landowner interest in the wildlife plantings. Dennis Thornburg, district game biologist of the Department of Conservation, helped farmers plant the seedlings with a mechanical tree planter provided by the department. Trees and shrubs came from state nurseries. More than 139 acres of streambank were seeded to a grass and legume mixture for stabilization and pheasant-nesting cover as part of the watershed protection project.

The Illinois Department of Conservation and SCS have common objectives: promote land-use practices that improve fish and wildlife habitat and assist in the conservation of other natural resources. Working together makes it easier to reach these objectives. ♦

A plot

by O. Eugene Hickman
Range conservationist, SCS
Medford, Oregon

For several years the Oregon Game Commission and the Soil Conservation Service have been cooperating in testing dryland grasses and legumes in southwestern Oregon.

The primary purpose of the experimental plots is to determine the adaptability of various grasses and legumes to the climate and soils in that part of the state.

The Game Commission uses the data to select the best adapted species for local areas where wildlife forage plantings are needed. These areas include badly depleted meadows and grassland in high-elevation deer summer range and the low-elevation oak-grassland that is important as winter range for deer.

The data also provide guidelines for establishing perennial grass seedings on the Kenneth Denman Management Area, a large tract of land managed by the Oregon Game Commission for wildlife. There, both cover and food are needed for pheasants and other upland game birds.

SCS uses the data from the experimental plots to help farmers, ranchers, and other landusers within the local conservation districts select the best species for various types of soils and for various uses, such as livestock forage,

today, a range tomorrow

stabilization of critical and eroded areas, road cutbanks, and fills.

Southwestern Oregon is somewhat unusual in that it is in a transitional zone amid the dry continental climate of eastern Oregon, the Mediterranean-type climate of California, and the mild, moist climate of the Willamette Valley. Native plants from all three areas often intermingle in this region forming a delicate ecological balance that is easily disturbed by man's activities. Where man has disrupted this balance and left the grasslands in poor condition, natural recovery is extremely slow. Some areas have been nearly denuded, and others have been dominated by weeds for many years.

Common species and seeding techniques for eastern Oregon, California, and the Willamette Valley have needed considerable testing in this region. Range seedings, for the most part, have not been successful. But now, as more and more species prove successful in the experimental plots, more and more rangeland will be revegetated and improved.

Since the first test plot was established by the two agencies in 1965, SCS has established more than 20 additional plots, eight in cooperation with the Game Commission.

Nearly all seedings must be made during October, just before fall rains begin. Each plot is seeded to various grasses and legumes that have value for livestock forage, wildlife habitat, or conservation plantings. Test species are selected from those that show promise in regions surrounding southwestern Oregon. Fertilizers are applied on some plots, and broadcast seeding is compared with drill-type seeding on other plots.

Laying out a test plot and habitat improvement seeding in southwestern Oregon—a cooperative effort between the Oregon Game Commission and SCS.

Because there are several critical stages in the development of a seedling, information is collected periodically so that the progress of each species can be documented and evaluated. Data collection usually begins on new plots in December, to determine if germination has occurred. Plant height and stand density are estimated at this time.

Early the following spring the new plot is checked to determine how each species survived the winter. A third evaluation is made at the beginning of summer to record plant height, stand density, and the severity of competition from annuals. During the second growing season another evaluation is made to determine the degree of survival through the hot, dry summer. Yearly observations are made thereafter to evaluate further progress.

If a species fails, it is hoped that sufficient data will have been collected to determine why it failed. When a species succeeds, SCS and the Oregon Game Commission have another tool to use in their efforts to aid range, wildlife, the soil, and the environment. ♦

Old Betsie gets a face lift

by Arvid Tesaker
District conservationist, SCS
Beulah, Michigan

and James R. Callison
RC&D project coordinator, SCS
Traverse City, Michigan

Old Betsie in northwest Michigan now sports 100 new erosion-control and fish-habitat structures and a beautiful protected watershed.

Old Betsie is a 93-mile-long cold water stream, originating at Green Lake, near the world famous Interlocken Arts Academy, and tumbling through rolling hill country on her way to Lake Michigan.

Indians called her Uns-zig-ze-bee. The French changed that to Aus Bec Scies. American sailors corrupted the French name to "Betsy," which was later refined to "Betsie."

The river was once a trout fisherman's dream, but recent years have brought deterioration. Loggers stripped her banks years ago and used her turbulent currents to float logs to mills. Two late 19th century hydroelectric dams still cross her—whether to remove them now is a public question.

Concerned about the Betsie, a group in 1952 formed the Betsie and Platte Rivers Watershed Improvement Association. Soil conservation district leaders with help from state, local, and federal agencies drew up a plan of action. Its main thrust was speeding up land treatment on the 166,000 acres of the watershed. Agencies performed their assigned tasks, and people got the

message, through group meetings and the press. Landowners applied agricultural, forest, and wildlife conservation practices. Conservation districts stepped up their tree-planting program.

Today, most of the land treatment has been done, so work is directed toward a problem left unsolved for many years—Betsie is still undercutting her banks and leaving ugly scars.

Early in 1969, some of the local people asked the steering committee of the Northwest Michigan Resource Conservation and Development (RC&D) Project for a boost to the Betsie River work. Their proposal was forwarded to the Soil Conservation Service and the Michigan Department of Natural Resources for action.

Logjams and logjam deflectors were built and eroded banks were riprapped to demonstrate how erosion could be controlled. All these improvements are natural appearing—as if the stream just happened to dump the logs and tree stumps, and chunks of rock just fell in place. Later the banks were seeded to grass, and trees were planted above the structures.

The demonstration was a success, so last summer work began on improving 24 miles of the stream. College students and local people assisted the Department of Natural Resources' Fish Division crews with this work.

Special recognition must be given to members of the Benzie Sportsmen Club and those of the Betsie River Sportsmen Club for their efforts over the years to get the stream-improvement program started. James Tanner, a member of the Benzie Sportsmen Club, has spent many of his 65 years on the Betsie River. He can remember when a person could catch brook trout nearly anywhere. Tanner says that 50 years ago the stream was deeper and narrower than at present.

John Drobena, canoe livery operator and a long-time resident on the Betsie, points out that the work on the riverbanks will not only improve trout fishing and control erosion but also restore the natural beauty of the stream.

Through cost-sharing, SCS will spend more than $100,000 in RC&D funds to protect about 23,000 feet of eroding streambanks. Stabilizing the riverbanks will eliminate about 7,500 cubic yards of sediment that are being deposited every year in the stream, in Homestead Reservoir, and in Betsie Harbor. Annual benefits from the installations are estimated at $1,400 for recreation and $6,700 for erosion control.

The overall project can have a favorable effect on both ecology and the economy. Improvements in water quality, fish habitat, and esthetic values along the stream will encourage greater recreation activity in the area and lead to increased tourist spending.

Work on the Betsie has spawned proposals for similar work on six other streams—the Manistee, Pere Marquette, Cedar River, Maple River, Black Creek, and Bear Creek. The RC&D committee has asked the Department of Natural Resources to begin surveys and inventories and plans to obtain cost-sharing funds through the Soil Conservation Service over the next 5 years.

An old history book calls the Betsie an "inconsiderable stream which empties into Lake Michigan." When her "face lifting" has been completed, she will stand scrutiny by other historians who will surely record her as "considerable" this time. ♦

(Opposite page) The Betsie River with improvements: natural looking logjams, logjam deflectors, and native stone protect the once-eroded banks. Grass, trees, and shrubs along the banks give added protection.
(Below) The Betsie River without erosion-control measures. Long stretches of streambank were seriously eroded before measures were installed.

A haven for wildlife

by James P. Gorman
Watershed planning specialist, SCS
Dover, Delaware

Delaware, like most Eastern States, is struggling to conserve its natural resources. Mushrooming land developments, with their usual people and pollution problems, are rapidly spreading south into the peninsula's fertile lowland. Competition for land and its natural resource assets becomes fiercer everyday.

Holding the line against this encroaching megalopolis is the land's number one conservationist, preservationist, ecologist—call him what you will—the farmer or rural landowner who understands well the lasting value of his natural resources.

An outstanding example of this close farmer-natural resource association is Otis Smith. In the mid-1950's Smith decided to go into the beef cattle business in his native Sussex County, Delaware. His first step was to find land that either was or could be converted into pastureland. Suitable land wasn't available, so Smith bought 800 acres of woodland that had been in cropland about 20 years before. He cleared 700 acres but left trees in a few selected spots to provide shade for cattle.

During a heavy rainy period in the late 1950's Smith found out why his land had been allowed to revert to woodland. A large part was poorly drained and under water. He immediately got in touch with the Sussex Soil Conservation District. The district, working with the Soil Conservation Service, helped Smith with his drainage problem. SCS gave technical aid in preparing a drainage plan that called for a minimum of channels to be constructed in conjunction with an extensive land-grading program.

Following excavation, spoil leveling, and grading, heavy rains again hit the area. Fresh, smooth channel slopes soon had numerous "blowouts." Heavy erosion, caused by surface water spilling over ditchbanks, filled channel bottoms with the highly erodible soil.

The near hopeless problem didn't stop Smith. He had the channels repaired and then constructed berms, having a maximum height of 18 inches and 3:1 back slopes, along both sides of all the channels. The berms diverted surface runoff laterally with the channels to selected spots where drop structures were constructed to ease the water into the channel.

As often happens, a drought followed the rainy period. Smith's pastureland became parched. But a wet perimeter in the lower third of the deep channels indicated that they were still drawing moisture from the subsoil. Smith and the SCS people set out to solve this problem.

They installed water-control structures designed to hold water levels above the critical moisture line. This equalizes the drainage effect of the channels when they are not needed. Water in the ditch bottoms also solves a channel maintenance problem. It prevents undesirable vegetative growth that decreases the effectiveness of the ditches. The small water-control structures are located so that nearly all channel bottoms are flooded when the top flash board is inserted.

It was obvious to Smith and the SCS men that the channel berms and slopes were going to require vegetative stabilization. Why not do so in conjunction with establishing a wildlife area along the channels, Smith asked?

A test area was set up that included 2,000 linear feet of ditchbanks where various varieties and combinations of stabilization and wildlife plantings were planted. The remaining berms and slopes were seeded to a temporary vegetative cover of Kentucky-31 fescue.

Next, all berms, slopes, and roadways were fertilized with generous applications of chicken manure. The wichura rose was sprigged on the top third of the berm 18 inches apart. Clusters or groups that consisted of a Japanese crabapple with autumn olive 15 feet on either side were planted on the lower third of the berm. Each cluster was 100 feet apart. In spots a redosier dogwood was used in place of autumn olive.

At selected areas on the ditchbanks and berms, reed canarygrass, crownvetch, weeping lovegrass, and bicolor lespedeza were planted.

(Top) This open channel on the Otis Smith farm, Fairmont, Del., is vegetated with wichura rose. Wildlife plantings cover the berms on both sides of the channel.
(Bottom) Natural shrubs and sericea lespedeza along the berm area of a drainage channel provide food and cover for wildlife.

By 1964, two things had happened. Otis Smith had converted his farm operation from cattle to field-crop farming, and it was evident that many of the wildlife plantings along his drainage ditches were going to be successful.

Smith decided to stabilize all channel slopes and berms with the wichura rose that normally does not exceed a height of 2 feet. He also decided to plant continuous plantings of autumn olive and flowering crabapple along one of the ditchbanks. A roadway on the opposite bank was seeded to a combination of sericea lespedeza and weeping lovegrass.

In the summer of 1971, state and federal conservation experts evaluated the area. Their report indicated that the wichura rose had stabilized slopes, berms, and other critical areas to the point that no evidence of erosion could be found. These areas have not needed maintenance in the 10 years since the original plantings were made. The rose plantings also offered valuable wildlife food and cover. The autumn olive, flowering crabapples, and red-osier dogwoods were covered with fruit. Sericea lespedeza had become the dominant plant along roadways. Natural growth of pokeweed, sumac, cherry, pine, and cedar—all of high value to wildlife—were interspaced with the domestic plantings.

There are many ironic twists of fate. Smith started out to be a leader in the cattle industry but may well end up being a pioneer in wildlife conservation. ♦

Pastures for geese

by Ivan L. Lines, Jr.
Biologist, SCS
Red Bluff, California

and Norman C. McGourty
District conservationist, SCS
Tulelake, California

Not many people have to face the problem of feeding about 3½ million waterfowl every spring and fall. This problem constantly confronts Bob Watson, manager of the Tulelake and Lower Klamath National Wildlife Refuges in northern California. He says, "I get a little anxious about the food supply when we have about 3½ million birds on the refuges at one time. We figure that these birds are eating close to a million pounds of food a day."

The Tulelake and Lower Klamath Refuges are a nesting area for about 5,000 pairs of ducks and geese. But the real influx—and the problem—occurs during fall and spring when a large part of the waterfowl in the Pacific flyway funnel through this area on their way south and on their return flight to northern nesting areas.

Refuge personnel have worked for several years to solve the food problem. A large part of the land on the refuges is planted to barley, oats, and wheat. This is designed for birds that feed in dry fields. Much of the remaining land is under water and managed for aquatic plants such as alkali bulrush, smartweeds, and pondweeds for those birds that prefer to feed in water.

The refuges are able to provide sufficient food in the fall, but they have had a problem providing enough food to satisfy the not-so-birdlike appetities of their springtime visitors. Waterfowl, particularly geese, eat large amounts of sprouting grasses and legumes during spring. Every year they would raid the private hay and pasture lands adjacent to the refuges, so something had to be done.

The Lower Klamath National Wildlife Refuge entered into a cooperative agreement with the Butte Valley Soil Conservation District. The refuge requested soils information and technical assistance in developing *goose pastures*!

A soil survey of the Lower Klamath Refuge was made by SCS. Those soils suitable for goose pastures were delineated on a soil map, consistent with the overall refuge operation. And, with SCS help, fields were leveled and borders built to facilitate irrigation.

Most of the sites selected for the goose pastures had two basic limitations—a high water table and a high salt content in the soils. These created several problems in selecting plant materials. Grasses had to be found that are tolerant of high salt concentrations and a high water table and, at the same time, provide palatable food for the geese.

Trial seedings on hundreds of acres of refuge land have been made using 'Alta' tall fescue, orchardgrass, tall wheatgrass, and 'Garrison' creeping meadow foxtail. Tall wheatgrass probably is the earliest to green up, but it soon becomes rank and unpalatable. Orchardgrass cannot always stand the salt and high water table. 'Garrison' creeping meadow foxtail was seeded in the spring of 1971 and looks very promising. But its overall desirability cannot be evaluated until it has shown that it will attract geese and can stand up under heavy grazing.

After the snow geese, cacklers, and whitefronted geese depart for the north country, the grass pastures serve as nesting cover for the resident waterfowl. Canada geese "hatch out" in April and May, and ducks come off the nest from early May into July. The grasses are then mowed and made into hay, leaving enough stubble for the ducks and geese that return in the fall.

"We intend to improve our goose pastures by trying new plant materials as they become available," says Watson. "These pastures will go a long way towards providing spring food and helping to stop depredation on nearby private lands." ♦

Geese have their own pastures on the Tulelake and Lower Klamath National Wildlife Refuges in northern California. These geese, on a spring stopover, are grazing sprouting grass. (Photograph courtesy of Tulelake National Wildlife Refuge.)

The emphasis is on fish and wildlife

by Floyd R. Fessler
Biologist, SCS
Nashville, Tennessee

Cooperation between state and federal agencies is not new in Tennessee. The Soil Conservation Service has worked closely with the Tennessee Game and Fish Commission since the 1940's on programs such as wildlife plantings for conservation district cooperators' farms, field trial evaluation of potential wildlife food and cover plants, and stocking cooperators' ponds with fingerling fish.

About 10 years ago this cooperation became channeled into a new effort: increasing the emphasis on fish and wildlife resources in connection with P.L. 566 watershed projects.

In 1962 an interagency biology work group was formed to assist in watershed planning. The work group was composed of biologists from the Tennessee Game and Fish Commission, the U.S. Bureau of Sport Fisheries and Wildlife, and the Soil Conservation Service.

The work group provides planning assistance in two phases. The first phase is an inventory of the fish and wildlife resources in the watershed. This study is made before the watershed project is authorized for planning. The biology work group determines the actual and potential fish and wildlife values in the watershed; these then can be considered by the local sponsors and the watershed planning party in developing the work plan.

The second phase consists of an evaluation study. After the watershed application is approved for planning, the biology work group studies the proposed measures for flood prevention to determine their effect on the fish and wildlife resources previously inventoried. From this study the need can be determined for associated or additional measures for developing or improving fish and wildlife resources or for minimizing damage to these resources.

This system has worked very well in Tennessee. Forty watershed projects in the P.L. 566 program have been studied and evaluated by the work group. Their recommendations are being incorporated into the design and construction of the flood-prevention measures. Thus, structural modifications are being made to reduce damage to fish and wildlife habitat.

For example, in the Tennessee part of the Crow Creek watershed in Franklin County the biology work group's field review resulted in the following modifications:

(1) Excavation of channels is to be done from one side of the channel only.

(2) On the opposite bank, only those trees are to be cut that have been marked for clearing by a two-man team—a biologist and an engineer.

(3) Low-head dams are to be installed in the new channels—15 to a mile as designated in the work plan. Low-head dams create pools for fish during low water but allow floodwaters to pass over.

(4) Where a channel is to be realigned, the bypassed segment of the old stream is to be retained and streamflow directed through it.

In the Weatherford-Bear Creek watershed in Wayne County, a watershed that has valuable fish and wildlife resources, more stringent modifications were mutually agreed upon. There, no channel excavating and realigning is to be done, and tree clearing, snagging, and bar removal is to be done in a way that avoids damage to fish and wildlife habitat.

Cooperation in Tennessee between SCS and state and federal game and fish agencies started early and continues to expand. Efforts that began years ago are benefiting the Tennessee of today, and what is being done now will preserve the state's rich wildlife heritage for years to come. ♦

Review

Two-thirds of Our Land: a National Inventory. *1971. USDA Program Aid 984. 20 pp., illus.*

Accurate information about our land and water resources can make the difference between success and failure in our effort to provide a livable and enjoyable environment. This booklet gives such information for privately owned rural land—land that covers two-thirds of our country.

To learn the character of this locally controlled land, the U.S. Department of Agriculture compiled the Conservation Needs Inventory (CNI) in 1958 and updated and expanded it in 1967.

This booklet presents the new data, effectively using color maps and charts. It tells us that 44 percent of this privately owned rural land is suitable for cultivation, 12 percent is suitable for limited cultivation, and 44 percent is unsuitable for regular cultivation. It shows that 3 percent has no conservation problem, 51 percent has an erosion problem, 19 percent has excess water, 25 percent has other unfavorable soil conditions, and 5 percent has adverse climate limitations. It gives acreage of land used for crops, pasture, range, forest, and other uses; the acreage of land needing conservation treatment; and the kind of treatment needed.

The vast amount of information in the Conservation Needs Inventory can be useful to many people. This booklet tells how to get further information.—ARMIN R. GRUNEWALD, *Resource Development Division, SCS, Washington, D.C.*

Priorities for Seed Technology Research. BY L. W. WOODSTOCK AND DAN NIFFENEGGER. *1971. USDA Misc. Pub. 1207. 20 pp., illus. $0.20.* More than 1,500 questionnaires covering nine major seed technology research areas corresponding to broad fields of study, 46 subsections of intermediate level, and 175 specific projects were distributed through 10 cooperating associations, including the American Seed Trade Association and the Canadian Seed Trade. This study is based on 515 replies and represents the most comprehensive survey of research priorities in seed technology conducted to date.

Warm-Water Fishponds. BY OLAN W. DILLON, JR., WILLIAM W. NEELY, VERNE E. DAVISON, AND LAWRENCE V. COMPTON. *1971. USDA Farmers' Bull. 2250. 14 pp., illus. $0.15.* This bulletin supersedes Farmers' Bulletin 2210, *Warm-Water Ponds for Fishing.* It is concerned only with warm-water ponds—not cool-water or cold-water ponds—and points out the importance of a favorable site, proper pond construction, erosion control, correct stocking, fertilizing, and weed control. And it tells how to manage a warm-water pond for fishing.

Outdoor Classrooms on School Sites. *1972. USDA PA-975. 22 pp., illus. $0.25.* This booklet is a source of ideas for developing and using outdoor classrooms on school sites. It explains how to get started, how to prepare a plan for the most comprehensive use of the school site, and where to get professional help in applying conservation practices that will improve learning opportunities.

Meetings

March

25–27 Western Audubon Conference, National Audubon Society, Asiloman Beach State Park, Calif.
27–29 American Pulpwood Association, Atlanta, Ga.

April

5–7 Symposium on Engineering Geology and Soils Engineering, Moscow, Idaho
7–11 National Science Teachers Association, New York, N.Y.
11–13 International Conference on Tropical and Subtropical Agriculture, Honolulu, Hawaii
15–20 American Society of Planning Officials, Detroit, Mich.
17–23 Earth Week '72
23–26 Association of American Geographers, Kansas City, Kans.
23–27 American Road Builders Association, New Orleans, La.
24–26 National Academy of Sciences, Washington, D.C.
30–May 4 Institute of Environmental Sciences, New York, N.Y.

May

1–5 League of Women Voters of the U.S., Atlanta, Ga.
3–6 The Garden Clubs of America, St. Louis, Mo.
4 Forestry and Wildlife Forum, Va. Polytechnic Institute, Blacksburg, Va.
7–11 The American Institute of Architects, Houston, Tex.
7–14 Soil Stewardship Week
12 Family Camping Federation, American Camping Congress, Chicago, Ill.
14–18 National Council of State Garden Clubs, Inc., Cleveland, Ohio
21–27 Urban Land Institute, 4th Annual Land Use Symposium, Toronto, Canada
23–25 Pollution Engineering and Equipment Exposition Conference, Chicago, Ill.
28–30 American Seed Trade Association, Portland, Oreg.

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UNIVERSITY MICROFILMS
SERIALS SECTION
300 NORTH ZEEB RD
ANN ARBOR MI 48106

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From the Administrator:

A host of wildlife

In a recent talk to conservation district supervisors, I pointed out that no single group in America has done more to preserve and enhance the existence of wildlife than have our conservation farmers and ranchers. That contention can be backed up with facts and figures.

Farmers and ranchers have shifted more than 9 million acres from crops and other uses to recreation and wildlife purposes.

They have installed management practices for wildlife habitat on nearly 30 million upland acres and nearly 4 million acres of wetland.

They have improved more than 1 million feet of fishing streams, and they have installed more than 150,000 feet of fish raceways with which more and more landowners are entering the field of commercial fish production.

In small watershed projects, we also can count many benefits to wildlife. The 5,000 watershed lakes built under Public Law 566 and earlier authorizations provide a great deal of wildlife habitat, with many thousands of acres of new water surface, better water control downstream, and better water quality. In many projects, fish and wildlife conservation is a full-fledged purpose, with federal cost-sharing.

In addition to these deliberate and considered aids to wildlife, farmers also provide wild creatures with food, shelter, and water simply by applying good conservation practices.

A farmer who terraces rolling land and plants on the contour prevents soil erosion, but he also helps reduce siltation of our streams and lakes that can damage fisheries habitat.

A windbreak or shelterbelt prevents wind erosion and traps snow, reducing moisture loss. But these same windbreaks often provide cover for upland game birds.

Pastures, properly grazed and managed, provide seeds and a variety of insect life important to wildlife.

Stripcropping, with its alternate strips of cover plants and grains, supports many more wild creatures than the same field planted in a single crop.

And the 1.8 million ponds that SCS has helped install provide nesting, resting, and feeding areas for wildfowl. It is estimated, for example, that one-third of the waterfowl in the Montana portion of the Central flyway is produced on stockwater ponds.

Now we have an additional opportunity to be of service. SCS recently alerted its employees in 3,400 offices to help keep an eye on rare and endangered wildlife in their work areas. We have a similar effort in process for rare and endangered plant species. We feel sure these efforts will receive the cooperation of local district supervisors and conservation farmers and ranchers, who should welcome the chance to make still another contribution to the cause of wildlife protection and enhancement.

Kenneth E. Grant